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Application/Control Number: 10/567,564
Art Unit: 1771

Page 2



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**BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES**

Application Number: 10/567,564
Filing Date: January 8, 2007
Appellants: CHOLLEY ET AL.

Debodhonyaa Sengupta
For Appellant

EXAMINER'S ANSWER

This is in response to the Appeal Brief filed 23 May 2011 appealing from the Office Action mailed 19 August 2010.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of the claims contained in the brief is substantially correct. However, claim 21 was indicated allowable in the Notice of Panel Decision from Pre-Appeal Brief Review mailed 21 March 2011.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is substantially correct. However, it is again noted that claim 21 was indicated allowable in

the Notice of Panel Decision from Pre-Appeal Brief mailed 21 March 2011. Thus, claim 21 is not rejected under any of the grounds for rejection.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

US 3,526,645	VANGERMAIN ET AL.	09-1970
US 4,693,991	BJORNSON ET AL.	09-1987
US 5,648,305	MANSFIELD ET AL.	07-1997

Howard Maskill, *Mechanisms of Organic Reactions*, New York, Oxford University Press Inc., 1996, p.62

(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102 / 35 USC § 103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office Action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

Art Unit: 1771

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1, 5, 17-19, and 22 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Vangermain (US 3,526,645).

5. With respect to claims 1 and 5, Vangermain discloses a catalyst (see Vangermain, Abstract) comprising: (a) a medium with a base of at least one refractory oxide (aluminum oxide, silica gel) (see Vangermain, column 5, lines 1-5), wherein the at least one refractory oxide contains 0.1 to 3% by weight of at least one metal of group VIII, and 0.1 to 3% by weight of at least one metal of group VI (see Vangermain, column 3, lines 29-34; and column 5, lines 25-34); and (b) an oxime (e.g., dimethylglyoxime) (see Vangermain, column 4, line 43).

6. With respect to claims 17 and 18, Vangermain discloses wherein the catalyst comprises at least 0.001 mole of the organic compound per mole of metal from groups VI and VIII (see Vangermain, column 5, lines 33-34).

7. With respect to claim 19, Vangermain discloses a process comprising contacting a catalyst in a medium of a base of at least one refractory oxide, at least one metal of group VIII and at least one metal of group VI with an oxime compound (see Vangermain, column 3, lines 29-34; column 4, line 43; and column 5, lines 1-5).

8. With respect to claim 22, Vangermain discloses wherein the organic compound is prepared ex situ, then deposited or impregnated on the catalyst (see Vangermain, column 4, line 43; and column 5, lines 1-5).

9. Claims 2-4, 11-13, and 20 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Vangermain (US 3,526,645) in view of Maskill (Howard Maskill, *Mechanisms of Organic Reactions*, New York, Oxford University Press Inc., 1996, p.62).

10. With respect to claims 2-4 and 20, see discussion *supra* at paragraphs 5 and 6.

Vangermain does not explicitly disclose wherein the oxime is formed by the reaction of an amine and a carbonyl compound.

However, oximes are known reaction products of amines and carbonyl compounds – e.g., the reaction of hydroxylamine and a ketone is known to produce oximes (see Maskill, page 62). Thus, the "oxime [being] formed by the reaction of an amine and a carbonyl compound" is inherent in the disclosure of Vangermain. When an examiner has reason to believe that the functional language asserted to be critical for

Art Unit: 1771

establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicant to prove that the subject matter not shown in the prior art does not possess the characteristics relied upon. See MPEP § 2112(V) (citing *In re Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980)).

Thus, Examiner finds Applicant's claims 2-4 and 20 unpatentable over Vangermain over what is already common knowledge in the art (as evidenced by Maskill).

11. With respect to claims 11-13, Vangermain discloses wherein the compound is dimethylglyoxime (see Vangermain, column 4, line 43).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office Action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 1, 5, 11-13, 17-19, and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjornson (US 4,693,991) in view of Mansfield (US 5,648,305).

16. With respect to claims 1, 5, 17, and 18, Bjornson discloses a hydrocarbon hydroconversion catalyst (see Bjornson, Abstract) comprising a medium with a base of at least one refractory oxide (alumina) (see Bjornson, column 2, line 24), wherein the at least one refractory oxide contains from about 0.5 to about 8% by weight of at least one metal of group VIII (see Bjornson, column 2, lines 27-29), and from about 1 to about 20% by weight of at least one metal of group VI (see Bjornson, column 2, lines 25-27).

Bjornson does not explicitly disclose wherein his catalyst further comprises an oxime compound.

However, Bjornson notes that his catalyst will experience a gradual loss of activity due to the buildup of coke deposits (see Bjornson, column 6, lines 31-32), the result being that higher process temperatures will be required to maintain the same level of conversion (see Bjornson, column 6, lines 29-32). Bjornson also explains that

his catalyst may be regenerated when its activity drops below a desired level (see Bjornson, column 6, lines 32-34). In this regard, Mansfield discloses a process for treating hydrocarbon hydroconversion catalysts by the addition of oxime compounds (see Mansfield, Abstract). Mansfield explains that the addition of oxime compounds to the hydroconversion catalysts has the beneficial effect of reducing or retarding the formation of coke deposits on the catalysts (see Mansfield, column 1, lines 64-67; and column 2, lines 1-9).

Therefore, the person having ordinary skill in the art would have been motivated to modify the catalysts of Bjornson by adding the oxime compounds of Mansfield in order to reduce the formation of coke deposits on the catalysts of Bjornson.

Finally, the person having ordinary skill in the art would have had a reasonable expectation of success in modifying the catalyst of Bjornson as described above because Mansfield explicitly discloses that the addition of oxime compounds to hydrocarbon hydroconversion catalysts of the same type used in Bjornson (see Mansfield, column 2, lines 21-26).

17. With respect to claims 19 and 22, Mansfield discloses a process comprising contacting a catalyst with an oxime compound in a hydrocarbon charge (see Mansfield, column 5, lines 9-16).

18. Claims 2-4, 11-13, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bjornson (US 4,693,991) in view of Mansfield (US 5,648,305) and Maskill (Howard Maskill, *Mechanisms of Organic Reactions*, New York, Oxford University Press Inc., 1996, p.62).

19. With respect to claims 2-4, 11-13, and 20, see discussion *supra* at paragraphs 16 and 17.

Mansfield does not explicitly disclose wherein the oxime is formed by the reaction of an amine and a carbonyl compound.

However, oximes are known reaction products of amines and carbonyl compounds – e.g., the reaction of hydroxylamine and a ketone is known to produce oximes (see Maskill, page 62). Thus, the “oxime [being] formed by the reaction of an amine and a carbonyl compound” is inherent in the disclosure of Mansfield. When an examiner has reason to believe that the functional language asserted to be critical for establishing novelty in claimed subject matter may in fact be an inherent characteristic of the prior art, the burden of proof is shifted to Applicant to prove that the subject matter not shown in the prior art does not possess the characteristics relied upon. See MPEP § 2112(V) (citing *In re Fitzgerald*, 619 F.2d 67, 70 (CCPA 1980)).

Thus, Examiner finds Applicant’s claims 2-4 and 20 unpatentable over Mansfield over what is already common knowledge in the art (as evidenced by Maskill).

(10) Response to Argument

Appellant’s arguments at page 11 of the brief

Appellant argues at page 11 of the brief that Examiner improperly rejected claims 1-5, 11-13, 17-20, and 22 under 35 U.S.C. 102(b) as anticipated by Vangermain in view of Maskill because only one reference can be used in making any rejection under 35 U.S.C. 102.

In response to Appellant's argument, Examiner first notes that the Office Action mailed 19 August 2010 rejection cited *only* Vangermain (and did *not* cite Maskill) in the grounds for rejection of claims 1, 5, 17-19, and 22. With respect to the remaining claims, Maskill was cited as teaching that oximes are known reaction products of amines and carbonyl compounds – e.g., the reaction of hydroxylamine and a ketone is known to produce oximes (see Maskill, page 62). Thus, the "oxime [being] formed by the reaction of an amine and a carbonyl compound" is *inherent* in the disclosure of Vangermain. Appellant does not dispute the teachings of Maskill.

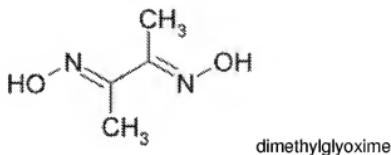
Appellant's arguments at page 13 of the brief

Appellant argues at page 13 of the brief that Vangermain discloses the combination of only two components and thus does not meet the limitations of Appellant's claim 1 which requires the presence of three components: (1) at least one metal of group VIII; (2) at least one metal of group VIB; and (3) at least one organic compound with at least two oxime groups.

In response to Appellant's arguments, Vangermain discloses a catalyst system comprising compounds "A" and "B" (see Vangermain, column 3, lines 29-34). He discloses molybdenyl acetylacetone (a group VIB metal) as exemplary of a compound "A" (see Vangermain, column 4, lines 26-27). In addition, he discloses that nickel dimethylglyoxime – a compound comprising *both* a group VIII metal *and* an organic compound having two oxime groups – may be compound "B" (see Vangermain, column 4, line 43; and claims 8 and 9). To be clear, the structure of dimethylglyoxime – clearly

Art Unit: 1771

disclosed in Vangermain – is reproduced below. The structure is entirely consistent with that of Appellant's claim 1.



Appellant's arguments at pages 13 and 14

Appellant argues at pages 13 and 14 of the brief that: (1) Vangermain discloses at least thirty-six examples of compounds A and B, giving rise to thousands of possible combinations of A and B compounds; (2) Examiner has provided no motivation for choosing nickel dimethylglyoxime from the examples of compound B; and (3) Examiner is applying impermissible hindsight in selecting nickel dimethylglyoxime from the list at column 4 of Vangermain.

In response to Appellant's arguments, Examiner first notes that inasmuch as the rejection was made, in part, on the basis of 35 U.S.C. 102 as being *anticipated by* Vangermain, then no showing of "motivation for choosing nickel dimethylglyoxime" is required in order to sustain such rejection. Moreover, claims 8 and 9 of Vangermain clearly cover Appellant's catalyst. Thus, Vangermain not only discloses but also claims the same catalyst that Appellant seeks to patent. Finally, Vangermain very clearly discloses that: "*In the same manner, all of the other compounds A may be*

combined with all of the compounds B thus forming excellent catalysts" (see Vangermain, column 4, lines 55-57) (emphases added).

Appellant's arguments at page 14

Appellant argues at page 14 of the brief that: (1) even if compound A and compound B of Vangermain were to be combined as the Examiner suggests, the resulting composition would still only include two components; and (2) Vangermain does not teach or suggest addition of another organic compound having at least two oxime groups in addition to compound A and compound B.

In response to Appellant's arguments, such arguments ignore the clear fact that compound B of Vangermain – nickel dimethylglyoxime – comprises both a group VIII metal (nickel) and an organic compound having two oxime groups (dimethylglyoxime). Thus, Appellant has *not* distinguished the claimed catalyst from that of Vangermain.

Appellant's arguments at pages 18 and 19 of the brief

Appellant argues at pages 18 and 19 of the brief that: (1) Mansfield discloses that any one of hydrazine, oxime, hydroxylamine, erythorbic acid, and mixtures thereof may be used to improve the effectiveness of a process catalyst; (2) a person having ordinary skill in the art would not be motivated to specifically select oximes from the list of compounds disclosed by Mansfield; (3) even if a person of ordinary skill were to look to Mansfield to select the oxime compound, the claimed catalyst could not be achieved

because the oxime of Mansfield has only one oxime group whereas the claimed catalyst has two oxime groups.

In response to Appellant's arguments, Examiner first notes that the grounds for rejection citing Mansfield were entered under 35 U.S.C. 103 (a) and not 35 U.S.C. 102. In this regard, Mansfield discloses the broad class of "oximes" as being effective reducing agents (see Mansfield, column 4, lines 30-34). While it is true that Mansfield discloses "methyl ethyl ketoxime" as a "most prefer[able]" oxime, it is also well established that a prior art reference may be relied upon for *all* that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir. 1989). Thus, disclosed examples and preferred embodiments do *not* constitute a teaching away from a broader disclosure or nonpreferred embodiments. *In re Susi*, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). In this regard, Appellant readily admits that "the oxime compound of Mansfield may have a similar structure as the oxime compound of Claim 1" (see Appellant's brief, page 19). Thus, Examiner submits that such structural similarity alone would have been sufficient reason or motivation for the person having ordinary skill in the art to pursue the claimed catalyst with organic oxime compounds similar to and consistent with the broad disclosure of Mansfield. A *prima facie* case of obviousness may be made when chemical compounds have very close structural similarities and similar utilities. *In re Payne*, 606 F.2d 303, 313, 203 USPQ 245, 254 (CCPA 1979) ("An obviousness rejection based on similarity in chemical structure and function entails the motivation of one skilled in the art to make a

Art Unit: 1771

claimed compound, in the expectation that compounds similar in structure will have similar properties.").

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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